



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/512,620 | 02/25/2000 | Harlan Sexton | 50277-403 | 7349 |

7590 10/23/2002

DITTHAVONG & CARLSON , P.C.
10507 BRADDOCK RD
SUITE A
FAIRFAX, VA 22032

[REDACTED] EXAMINER

NEWGEN, LILIAN

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| 2127 | |

DATE MAILED: 10/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

HG

| | | |
|------------------------------|---------------------------|-----------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 09/512,620 | SEXTON ET AL. |
| | Examiner Lilian Newgen | Art Unit 2156 2127 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 25 February 2000.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-16 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action in response to application filed on February 25, 2000. Claims 1-16 are presented for examination.

Priority

2. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 as follows:

The second application must be an application for a patent for an invention which is also disclosed in the first application (the parent or provisional application); the disclosure of the invention in the parent application and in the second application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ 2d 1077 (Fed. Cir. 1994).

An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification or in an application data sheet (37 CFR 1.78(a)(2) and (a)(5)).

Specification

3. The attempt to incorporate subject matter into this application by reference to applications is improper because the referencing applications on pages 1-3 of the specification do not include the serial numbers of the referenced applications.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable by U.S. Patent No. 6,223,202 issued to Bayeh in view of U.S. Patent No. 6,330,709 issued to Johnson et al.

As per claim 1, the reference of Bayeh discloses a method for serving requests received by a server in a multiple-user environment (e.g. fig. 4), the method comprising the steps of:

Establishing a first session between said server and a first user (e.g. fig. 4, 110a, col. 7, lines 40-59);

Establishing a second session between said server and a second user (e.g. fig. 4, 110b, col. 7, lines 40-59);

Responding to requests that are received by said server in said first session by executing virtual machine code using a first virtual machine instance (e.g. col. 7, lines 51-67 – col. 8, lines 1-20, col. 9, lines 62-67 – col. 10, lines 1-9); and

Responding to requests that are received by said server in said second session by executing virtual machine code using a second virtual machine instance (e.g. col. 7, lines 51-67 – col. 8, lines 1-20, col. 9, lines 62-67 – col. 10, lines 1-9);

Wherein said first virtual machine instance and said second virtual machine instance are distinct instances of a same type of virtual machine (e.g. fig. 4, VM 152, VM 154, col. 11, lines 22-34);

Wherein said first virtual machine instance exists within said server concurrently with said second virtual machine instance (e.g. fig. 4, VM 152, VM 154, Server, 60, col. 11, lines 47-52).

While the reference of Bayeh teaches of said first machine instance and said second virtual machine instance are two of a plurality of virtual machine instances, associated with said server (e.g. col. 3 lines 56-60, col. 4, lines 8-20), it fails to explicitly teach of wherein said first machine instance and said second virtual machine instance are two of a plurality of virtual machine instances, associated with said server that share access to data stored in a shared state area allocated in volatile memory associated with said server. The reference of Johnson et al. teaches of accessing data stored in shared address space (e.g. col. 20, lines 1-45). Therefore, it would have been obvious for one having an ordinary skill in the art at the time the invention was made to include Johnson et al. teaching to Bayeh's invention to share access to common code stored in state area between virtual machines in order for the system to save memory. This will allow the system to perform more efficiently when optimizing the system resources.

As per claim 9, it is rejected for the same reason as stated above.

6. Claims 2-5, and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable by U.S. Patent No. 6,223,202 issued to Bayeh in view of U.S. Patent No. 6,330,709 issued to Johnson et

al. as applied to claims 1 and 9 above and further in view of U.S. Patent No. 6,075,938 issued to Bugnion et al.

As to claim 2, the combined references of Bayeh and Johnson et al do not explicitly disclose of the method of claim 1 further comprising the step of sharing, between said first virtual machine instance and said second virtual machine instance, a set of one or more resources within said shared state area. However, the reference of Bugnion et al. teaches of the step sharing resources between the virtual machines (e.g. fig. 4, col. 6, lines 6-67, col. 15, lines 10-26). Therefore, it would have been obvious for one having an ordinary skill in the art at the time the invention was made to include Bugnion et al. teaching to the combined teaching of Bayeh and Johnson et al. to utilize the resources between machines in order for the system to perform efficiently.

As to claim 3, the reference of Bugnion et al. do not explicitly teach of the method of claim 2 wherein the step of sharing a set of one or more resources includes sharing data associated with an object class. Instead, the reference of Bugnion et al. teaches of the virtual machines sharing the same root disk containing the kernel and application programs (e.g. col. 15, lines 10-26, Fig. 4, virtual machines shared code). “Official Notice” is taken that both the concept and advantages of relating the sharing of application programs to the sharing data associated with the object classes because sharing the code of application programs or the application programs are also involve sharing the object classes is well known and expected in the art. Therefore, it would have been obvious for one having an ordinary skill in the art at the

time the invention was made to include Bugnion et al. teaching to the combined teaching of Bayeh and Johnson et al. to provide more effective sharing of the resources between machines in order for the system to perform efficiently.

As to claim 4, the reference of Bugnion et al. teaches of the method of claim 1 wherein said plurality of virtual machine instances share read-only access to said data stored in said shared state area allocated in volatile memory within said server (e.g. fig. 4, col 6, lines 6-36). Therefore, it would have been obvious for one having an ordinary skill in the art at the time the invention was made to include Bugnion et al. teaching to the combined teaching of Bayeh and Johnson et al. to provide protection and prevention to modification to shared data that is stored in volatile memory.

As to claim 5, the reference of Johnson et al. teaches of the method of claim 1 wherein: Said shared state area stores data associated with an object class (e.g. col. 20, lines 1-45). While the combined references of Bayeh and Johnson et al. teach of multiple virtual machines, they do not explicitly disclose said first virtual machine instance stores, in session-specific memory associated with said first virtual machine instance, a first value for a static variable associated with said object class and said second virtual machine instance stores, in session-specific memory associated with said second virtual machine instance, a second value for said static variable associated with said object class. “Official Notice” is taken that both the concept and advantages of providing for each virtual machine has to have each own session-specific memory that stores a value for a static variable associated with object class is well known and

expected in the art. It would have been obvious to one having an ordinary skill in the art to include first virtual machine instance stores, in session-specific memory associated with first virtual machine instance, a first value for a static variable associated with object class and second virtual machine instance stores, in session-specific memory associated with second virtual machine instance, a second value for static variable associated with object class to the combined teachings of Bayeh and Johnson et al. because that would retain the same data for each virtual machine after it is created until the call memory is terminated.

As per claims 10-13, they are rejected for the same reason as stated above.

7. Claims 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable by U.S. Patent No. 6,223,202 issued to Bayeh in view of U.S. Patent No. 6,330,709 issued to Johnson et al. as applied to claims 1 and 9 above and further in view of U.S. Patent No. 6,047,053 issued to Miner et al.

As to claim 6, while the combined references of Bayeh and Johnson et al. teach of virtual machine, they do not explicitly disclose of the method of claim 1 further comprising the steps of responding to a call associated with a particular session with said server by allocating a call memory for the particular virtual machine instance associated with said particular session; and discarding said call memory upon termination of said call. The reference of Miner et al. teaches of the virtual machine allocates and deallocates sessions for incoming calls (e.g. col. 22, lines 40-58). Therefore, it would have been obvious to one having an ordinary skill in the art to include

the teaching of Miner et al. to the combined teachings of Bayeh and Johnson et al. in order to start and terminate the session as needed. However, the reference of Miner et al just teaches of allocating and deallocating sessions for incoming calls but does not explicitly teach of allocating and discarding a call memory. The allocating and deallocating each session for incoming calls are also required the allocating and deallocating a memory slot for each call that is associated with the particular session in order for the allocation and deallocation of the session to be done. Therefore, the allocating and deallocating a call memory is an inherent step of the allocating and deallocating sessions for the incoming calls.

As to claim 14, it is rejected for the same reason as stated above.

8. Claims 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable by U.S. Patent No. 6,223,202 issued to Bayeh in view of U.S. Patent No. 6,330,709 issued to Johnson et al. as applied to claims 1 and 9 above and further in view by U.S. Patent No. 6,393,605 issued to Loomans.

As to claim 7, while the combined references of Bayeh and Johnson et al teach of the method of claim 1 further comprising the step of responding to a call associated with a particular session with said server for execution in a system thread, the particular virtual machine instance associated with the particular session, they fail to explicitly teach of scheduling. The reference of Loomans teaches the general process of managing multiple threads of execution (e.g. col. 8, lines 15-39, fig. 4, thread manager, 406). Therefore, it would have been obvious for one having

an ordinary skill in the art at the time the invention was made to include Loomans teaching to the combined teachings of Bayeh and Johnson et al. for the purpose of managing threads execution on the particular virtual machine for balancing the workload in a system.

As to claim 15, it is rejected for the same reason as stated above

9. Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable by U.S. Patent No. 6,223,202 issued to Bayeh in view of U.S. Patent No. 6,330,709 issued to Johnson et al. as applied to claims 1 and 9 above and further in view by U.S. Patent No. 6,401,109 issued to Heiney et al.

As to claim 8, while the combined references of Bayeh and Johnson et al. teach of creating the virtual machines, it fails to explicitly teach of the method of claim 1 further comprising the steps of spawning the first virtual machine instance by instantiating a data structure and changing the state of said first virtual machine instance during execution of said virtual machine code by manipulating data within said data structure. The reference of Heiney et al. teaches of spawns off a first copy of the Java virtual machine to create a second Java process object (e.g. col. 1, lines 50-63). Therefore, it would have been obvious for one having an ordinary skill in the art at the time the invention was made to include the teaching of Heiney et al. to the combined teaching of Bayeh and Johnson et al. in order to create any of the additional objects that is necessary to perform the function requested. Also, the reference of Heiney et al. teaches of changing the listening state when data is received and read from the socket (e.g. col. 6,

Art Unit: 2127

lines-49-67 – col. 7, lines 1-3). Therefore, it would have been obvious for one having an ordinary skill in the art at the time the invention was made to include the teaching of Heiney et al. to the combined teachings of Bayeh and Johnson et al. in order to perform the desired functions by processing the received data to change the state of execution.

As to claim 16, it is rejected for the same reason as stated above

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lilian Newgen whose telephone number is (703) 305-7864.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Lilian Newgen
Examiner
Art Unit 2127

In
October 11, 2002

[Signature]
JOHN A. FOLLANSBEE
PRIMARY EXAMINER